ABSTRACT

Thesis: The Utilization of Statistical Machine Learning on Casual Linkage between Public debt and Economic growth: An Empirical Investigation on Ghana Economy

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The rising magnitude of public debt has been a primary concern of any government and policymakers in alleviating their economy and encourage economic growth. The results of many empirical studies in Ghana have proven the causal linkage between public debt and economic growth using traditional statistical methods such as regression and times series. The linear regression model has the most popular choice for designing this type of relationship [see Owusu-61Nantwi and Erickson (2016)]. Linear models suffer some set back such as the absence of normality and other standard assumptions and some constrained where economic complexity is concerned. The main objective of this study is to find a suitable learning algorithm to model the causal linkage between economic growth (GDP growth) and its associated economic variables. This research used time series data from 1970 to 2019. The effectiveness of the models will be evaluated by several diagnostic and goodness of fit tests and cross validation. We have considered three different types of models, the supervised multiple linear regression model, the semi-supervised diagnostic-robust regression model and unsupervised principal component regression model. Numerical results obtained from both model fitting and cross validation show that the diagnostic-robust regression performs best followed by the principal component regression and multiple linear regression.